

Application No. 09/762,765

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### **REMARKS/ARGUMENTS**

Petition is hereby made under the provisions of 37 CFR 1.136(a) for an extension of one month of the period for response to the Office Action. The Director is authorized to charge the prescribed fee to our deposit account as indicated in the enclosed Fee Transmittal form.

The Examiner indicated that claims 16 and 17 stand withdrawn from further consideration as being drawn to a non-elected invention. These claims have been deleted, such deletion being made without prejudice to applicants right to file a divisional or continuation application directed to the deleted claims.

The Examiner indicated that, if applicant wishes to claim priority under 35 USC 119(e), specific reference to the earlier-filed application must be made in this application. The introductory paragraph, inserted by Preliminary Amendment, has been amended to refer to the priority US Provisional application, as well as its status. It is submitted that the priority claim under 35 USC 119(e) is now correct.

The Examiner objected to the disclosure on page 4, line 16. The disclosure has been corrected to refer to "hydrosilylation". In addition, in line 17, the spelling of the word "unsaturated" has been corrected.

The Examiner rejected claims 9, 13 and 19 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner raised three issues:

(A) The Examiner considered the term "PP" in claim 9 to lack proper antecedent basis. As noted below, claim 8 has been rewritten in independent form and refers to a branched copolymer of

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polypropylene (PP), thereby providing antecedent basis for the abbreviation PP in claim 9, which depends on claim 8.

(B) The Examiner considered claim 13 to be confusing. The Examiner is correct that the term "connected" should be "converted" and the claim has been amended accordingly.

(C) The Examiner considered claim 19 to be incomplete and hence indefinite in lack of definition of the variable R of the "Si-OR group" recited in claim 19. There is no indefiniteness. As recited in claim 19, step 1 involves hydrosilylation of a vinyl end group of polypropylene with a trialkoxysilane to form a functionalized polymer. Post-reaction branching of the functionalized polymer is effected by resulting Si-OR groups to form a Si-O-Si bridge. Thus, the Si-OR group is one which forms a Si-O-Si bridge.

Having regard to the above comments and the changes made, it is submitted that all claim fully comply with 35 USC 112, second paragraph.

The Examiner rejected claims 1 to 7 and 20 to 22 under 35 USC 103(a), as obvious over WO 97/47665 and in view of Dow.

As the Examiner recites:

"WO '665 teaches polysiloxane-modified polypropylene made by hydrosilylating terminal double bonds in the polymer, the reaction being performed via melt phase reactive extrusion methodology (page 2, lines 10 *et seq.*). As in the present invention, the terminal double bonds may be created by via peroxide degradation of polypropylene (see page 3, final paragraph and *cf.* Claim 21, line 2). Reactive extrusion hydrosilylation of polypropylene with polydimethylsiloxane is demonstrated (page 17, Example 6)."

As the Examiner observes WO '665 differs from the invention in the provision of linear products rather than branched copolymers.

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The Examiner refers to the paragraph bridging pages 6 and 7 of the WO'665 reference. This passage refers to the hydrosilylation reaction and contains the statement that:

"Silanes with more than two Si-H groups preferably are not employed to avoid branching and cross-linking"

Thus, WO '665 points away from any reaction which may produce branching and cross-linking and considers such effects undesirable. The present invention requires branched structures.

It is submitted that the Dow reference does not remedy this defect. Dow is concerned with the provision of a copolymer of polypropylene and organopolysiloxane. Dow employs a PP which has double bonds (isopropenyl bonds) at both ends of the PP molecule. By contrast only one end of the PP is degraded in the present invention to provide double bonds. The reference teaches the formation of block copolymers as opposed to the branched structure of the present invention. In fact, a branched copolymer cannot be obtained in the Dow case using an  $\alpha,\omega$ -diene-propylene polymer.

Accordingly, it is submitted that claims 1 to 7 and 20 to 22 are patentable over the applied art and hence the rejection of claims 1 to 7 and 20 to 22 under 35 USC 103(a) as being unpatentable over WO 97/47665 and Dow.

The Examiner rejected claims 1 to 7 under 35 USC 102(b) as anticipated by, or in the alternative, under 35 USC 103(a) as being obvious over Kennedy et al.

As noted above claim 1 is limited to a branched copolymer of a polyolefin and a silicone polymer which is produced by melt phase reactive extrusion hydrosilylation.

The Kennedy reference teaches the preparation of a star polymer having a polysiloxane core and polyisobutylene (PIB) arms. The core has Si-H

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groups that can react with the olefin-terminated PIB. The reaction takes place in the solution phase to produce a star polymer.

Applicants procedure utilizes melt phase reactive extrusion hydrosilylation and produces a branched structure. As the Examiner observes, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

In the current instance the products are different and not obvious variants. Applicants use a melt phase reactive extrusion hydrosilylation to produce a branched structure while Kennedy uses a liquid phase procedure to produce a star structure, not a branched structure.

Accordingly, it is submitted that the claims 1 to 7 are patentable over the applied prior art and hence the rejection of claims 1 to 7 under 35 USC 102(b) as anticipated by, or in the alternative, under 35 USC 103(a) as obvious over Kennedy, should be withdrawn.

The Examiner indicated that claims 8, 10 to 12, 14 and 15 are objected to an dependent on a rejected base claim but would be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims. Claim 8 has been rewritten in independent form, thereby rendering allowable claims 8, 10 to 12, 14 and 15.

The Examiner indicated that claims 9, 13 and 19 would be allowable if amended or rewritten to overcome the rejection under 35 USC 112, second paragraph. As noted above in the discussion of the rejection, it is believed that amendment to claims 8 and 13 overcome the rejection under 35 USC 112, second paragraph, and hence it is believed that these claims also are allowable.


The Examiner indicated that claim 18 is allowable over the art of record.

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It is believed that this application is now in condition for allowance and early and favourable consideration and allowance are respectfully solicited.

Respectfully submitted,

  
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